

What is Claimed is:

1.           A mobile communication system comprising:
  - 2           a base station; and
  - 3           a mobile station,
  - 4           a radio channel being set between said base
  - 5 station and said mobile station, and a packet being
  - 6 transmitted from said base station to said mobile
  - 7 station by using the radio channel,
  - 8           wherein said base station comprises
    - 9           a base station transmitting/receiving section
    - 10 which sets the radio channel to said mobile station,
    - 11           a base station state updating section which
    - 12 generates transmission/reception state update
    - 13 information that indicates update of a packet receivable
    - 14 state in said mobile station and notifies said mobile
    - 15 station of the transmission/reception state update
    - 16 information, and
    - 17           a base station information storage section
    - 18 which continuously holds dedicated physical channel
    - 19 setting information in the radio channel in a suspend
    - 20 state, and
    - 21           said mobile station comprises
      - 22           a mobile station transmitting/receiving
      - 23 section which sets the radio channel to said base
      - 24 station,
      - 25           a mobile station state updating section which

26 sets, on the basis of the transmission/reception state  
27 update information, one of an active state in which the  
28 packet can be received and the suspend state in which  
29 the packet cannot be received, and

30 a mobile station information storage section  
31 which continuously holds the dedicated physical channel  
32 setting information in the radio channel in the suspend  
33 state.

2. A system according to claim 1, wherein when  
2 said mobile station state updating section receives a  
3 change instruction to the active state, said mobile  
4 station transmitting/receiving section starts at least  
5 one of standing by for the packet and  
6 transmission/reception of dedicated physical channel  
7 data to be transmitted by a dedicated physical channel.

3. A system according to claim 2, wherein when  
2 said mobile station state updating section receives a  
3 change instruction to the suspend state, said mobile  
4 station transmitting/receiving section stops at least  
5 one of transmission of the dedicated physical channel  
6 data and reception of the dedicated physical channel  
7 data while continuously holding the setting information  
8 in the radio channel.

4. A system according to claim 2, wherein when

2 said base station is in the suspend state, said base  
3 station transmitting/receiving section stops at least  
4 one of transmission of dedicated physical channel data  
5 and reception of the dedicated physical channel data  
6 while continuously holding the setting information in  
7 the radio channel.

5. A system according to claim 1, wherein said  
2 mobile station state updating section sets the active  
3 state when the transmission/reception state update  
4 information cannot be normally received.

6. A system according to claim 1, wherein said  
2 mobile station further comprises a packet control signal  
3 generation section which, when a change instruction to  
4 the active state is normally received, transmits to said  
5 base station a notification reception confirmation  
6 signal of the change instruction.

7. A system according to claim 6, wherein said  
2 packet control signal generation section uses an  
3 existing signal as the notification reception  
4 confirmation signal.

8. A system according to claim 7, wherein said  
2 packet control signal generation section uses a channel  
3 quality indication representing a reception quality of a

4 downlink channel as the notification reception  
5 confirmation signal.

9. A system according to claim 6, wherein said  
2 base station further comprises a packet transmission  
3 control section which stops transmitting the packet to  
4 said mobile station when no notification reception  
5 confirmation signal can be received.

10. A system according to claim 6, wherein said  
2 packet control signal generation section notifies said  
3 base station of the channel quality indication  
4 immediately before receiving the transmission/reception  
5 state update information.

11. A system according to claim 1, wherein said  
2 base station further comprises a priority determination  
3 section which preferentially selects a mobile station  
4 having a high channel quality and notifies the mobile  
5 station of a change instruction to the active state.

12. A system according to claim 1, wherein said  
2 mobile station transmitting/receiving section starts one  
3 of transmission of a dedicated physical channel and  
4 reception of the dedicated physical channel on the basis  
5 of the setting information continuously held when said  
6 mobile station changes from the suspend state to the

7 active state.

13. A system according to claim 1, wherein said  
2 base station state updating section transmits the  
3 transmission/reception state update information at a  
4 timing known in advance.

14. A mobile station which sets a radio channel to  
2 a base station and receives a packet transmitted from  
3 said base station by using the radio channel,  
4 comprising:

5 a mobile station transmitting/receiving  
6 section which sets the radio channel to the base  
7 station;

8 a mobile station state updating section which  
9 sets, in accordance with transmission/reception state  
10 update information that is transmitted from the base  
11 station and indicates update of a packet receivable  
12 state, one of an active state in which the packet can be  
13 received and a suspend state in which the packet cannot  
14 be received; and

15 a mobile station information storage section  
16 which continuously holds dedicated physical channel  
17 setting information in the radio channel in the suspend  
18 state.

15. A station according to claim 14, further

2 comprising  
3 a mobile station user data separation section  
4 which separates a reception signal from said mobile  
5 station transmitting/receiving section into user  
6 information and control information,  
7 a reception quality measuring section which  
8 measures a reception quality of a CPICH from said mobile  
9 station transmitting/receiving section,  
10 a packet reception determination section which  
11 determines, on the basis of the control information from  
12 said mobile station user data separation section, one of  
13 presence/absence of the control information of an  
14 HS-SCCH and presence/absence of normal reception of the  
15 packet from the base station, and  
16 a packet control signal generation section  
17 which, when a change instruction to the active state is  
18 normally received, transmits a notification reception  
19 confirmation signal of the change instruction to the  
20 base station, and  
21 a signal synthesizing section which  
22 synthesizes a notification reception confirmation signal  
23 and an external signal and transmits a DPCH (UL) and an  
24 HS-DPCCH.

16. A station according to claim 15, wherein said  
2 mobile station user data separation section comprises  
3 a mobile station ID determination section

4    which detects a mobile station ID information contained  
5    in the HS-SCCH and determines whether the mobile station  
6    ID information coincides with a mobile station ID of  
7    said mobile station, and  
8                a DL data determination section which  
9    determines presence/absence of transmission of the  
10   dedicated physical channel data (DL).

17.            A base station which sets a radio channel to a  
2    mobile station and transmits a packet to the mobile  
3    station by using the radio channel, comprising:  
4                a base station transmitting/receiving section  
5    which sets the radio channel to the mobile station;  
6                a base station state updating section which  
7    notifies the mobile station of transmission/reception  
8    state update information that indicates update of a  
9    packet receivable state and sets the mobile station in  
10   one of an active state in which the packet can be  
11   received and a suspend state in which the packet cannot  
12   be received; and  
13                a base station information storage section  
14   which continuously holds dedicated physical channel  
15   setting information in the radio channel in the suspend  
16   state.

18.            A station according to claim 17, further  
2    comprising

3                   a base station user data separation section  
4   which separates a reception signal from said base  
5   station transmitting/receiving section into user  
6   information and control information,  
7                   a buffer which stores the user information,  
8                   a packet transmission control section which  
9   executes transmission control of the packet on the basis  
10   of the control information from said base station user  
11   data separation section and mobile station information  
12   from said base station state updating section, and  
13                   a signal synthesizing section which  
14   synthesizes the user information from said buffer and a  
15   state update information signal from said base station  
16   state updating section.

19.           A station according to claim 18, wherein  
2                   said packet transmission control section  
3   comprises a scheduling/transmission mode deciding  
4   section which decides a scheduling/transmission mode,  
5   and  
6                   said base station user data separation section  
7   comprises a UL data determination section which  
8   determines presence/absence of transmission of the  
9   dedicated physical channel data (UL).

20.           A packet communication method for a mobile  
2   communication system in which a radio channel is set



3 between a base station and a mobile station, and a  
4 packet is transmitted from the base station to the  
5 mobile station by using the radio channel, comprising  
6 the steps of:  
7 causing the base station to notify the mobile  
8 station of transmission/reception state update  
9 information that indicates update of a packet receivable  
10 state in the mobile station;  
11 setting, on the basis of the transmitted  
12 transmission/reception state update information, one of  
13 an active state in which the mobile station can receive  
14 the packet and a suspend state in which the mobile  
15 station cannot receive the packet; and  
16 causing the base station and the mobile  
17 station to continuously hold dedicated physical channel  
18 setting information in the radio channel in the suspend  
19 state.